

CLAIMS:

What is claimed is:

1. A device for efficiently detecting subatomic particles comprising:
a detector assembly, said detector assembly comprising:

5 a plurality of transducers; and

at least one detector crystal optically coupled to at least some of said plurality of transducers, said at least one detector crystal having a plurality of slits, each slit being approximately equivalent in length as each other slit and said plurality of slits being oriented parallel to the optical axis of said at least some of
10 said plurality of transducers;

a plurality of processors, said plurality of processors being arranged in a plurality of substantially parallel layers, and each of said processors being capable of communicating with processors to each lateral side in one substantially parallel layer, receiving communication from a processor in a second substantially parallel layer and
15 transmitting to a third processor in a third substantially parallel layer;

a plurality of channels, each of the plurality of channels being coupled to one of the plurality of transducers and at least three of the plurality of processors, the three of the plurality of processors being in the first, second and third substantially parallel layers;

a plurality of channels, each of the plurality of channels being coupled to one of
20 the plurality of transducers and at least three of the plurality of processors, the three of the plurality of processors being in the first, second and third substantially parallel layers;
and

a pyramidal funneling structure, said pyramidal funneling structure comprising a plurality of funnel input processors, each of the plurality of funnel input processors being
25 coupled to a channel and having two of the plurality of funnel input processors coupled to an interior funnel processor.

2. The device recited in claim 1 above, wherein the detector assembly further comprises:

5 a second plurality of transducers, said second plurality of transducers optically coupled to the least one detector crystal, the second plurality of transducers being coaxial with at least some of the plurality of transducers.

3. The device recited in claim 2 above, wherein a light guide is the second plurality of transducers optically coupled between the at least one detector crystal and the second plurality of transducers.

10 4. The device recited in claim 2 above, wherein at least one of the plurality of processors performs a depth of interaction calculation.